

CLAIMS

What is claimed is:

1. A scrubber inlet device comprising:
 - an inlet manifold including
 - a port configured to receive an effluent gas stream from an exhaust line
 - and,
 - a heated gas inlet configured to receive a stream of heated gas; and
 - a scrubber interface device in fluid communication with the inlet manifold and
 - configured to deliver the effluent gas stream from the inlet manifold to a
 - gas scrubbing system.
2. The scrubber inlet device of claim 1 wherein the port includes an insulating insert sleeve.
3. The scrubber inlet device of claim 1 wherein the inlet manifold further includes insulation around an exterior thereof.
4. The scrubber inlet device of claim 1 wherein the scrubber interface device includes
 - a lower portion having a generally cylindrical interior surface, and
 - an insulated insert portion providing fluid communication between the inlet manifold and the lower portion of the scrubber inlet device.

5. The scrubber inlet device of claim 4 wherein the scrubber interface device further includes a system for providing a washing fluid to the generally cylindrical interior surface of the lower portion.
6. The scrubber inlet device of claim 4 wherein the insulated insert portion extends into the inlet manifold.
7. The scrubber inlet device of claim 1 wherein the inlet manifold is separable from the scrubber interface device.
8. The scrubber inlet device of claim 1 wherein the inlet manifold further includes a plunger for clearing the scrubber interface device.
9. The scrubber inlet device of claim 8 wherein the plunger includes a perforated plunger head to allow the effluent gas stream to flow through the scrubber interface device whenever the plunger head is disposed therein.
10. The scrubber inlet device of claim 8 wherein the scrubber interface device includes an insulated insert portion, having a minimum diameter, for providing fluid communication to the inlet manifold, and the plunger includes a plunger head having a maximum diameter less than the minimum diameter of the insulated insert portion.

11. The scrubber inlet device of claim 10 wherein the insulated insert portion includes a tapered portion.
12. The scrubber inlet device of claim 8 wherein the inlet manifold further includes a recessed portion within which the plunger is retracted when not in use.
13. The scrubber inlet device of claim 12 wherein the recessed portion includes the heated gas inlet.
14. The scrubber inlet device of claim 13 wherein the recessed portion includes a gas distribution system to distribute the stream of heated gas from the heated gas inlet.
15. The scrubber inlet device of claim 1 further comprising a source of heated gas configured to provide the stream of heated gas to the heated gas inlet.
16. The scrubber inlet device of claim 15 wherein the source of heated gas provides an inert gas.
17. The scrubber inlet device of claim 15 wherein the source of heated gas provides N₂.
18. The scrubber inlet device of claim 15 further comprising a gas temperature regulation system configured to regulate a temperature of the heated gas provided by the source of heated gas.

19. The scrubber inlet device of claim 18 wherein the gas temperature regulation system includes

a temperature sensor, and

a controller in electrical communication with the temperature sensor and the source of heated gas and configured to regulate the temperature of the heated gas according to a signal from the temperature sensor.

20. A method for delivering an effluent gas stream into a gas scrubbing system comprising:

receiving the effluent gas stream into a manifold;

heating interior surfaces of the manifold to near a condensation temperature of the effluent gas; and

providing the effluent gas stream to an interface device that is effective to suppress nucleation of condensation from the effluent gas stream, and

configured to direct the effluent gas stream into the gas scrubbing system.

21. The method of claim 20 wherein the condensation temperature of the effluent gas is the condensation temperature of aluminum chloride.

22. The method of claim 20 wherein heating interior surfaces of the manifold includes flowing a heated gas stream into the manifold.

23. The method of claim 20 wherein providing the effluent gas stream to the interface device includes passing the effluent gas stream through an abrupt hot-to-cold transition region in order to suppress condensation.
24. The method of claim 20 wherein heating interior surfaces of the manifold to near the condensation temperature of the effluent gas includes heating interior surfaces of the manifold to above the condensation temperature of the effluent gas.
25. The method of claim 20 further comprising clearing the interface device while providing the effluent gas stream to the interface device.
26. A scrubber inlet device comprising:
 - an inlet manifold including
 - a port configured to receive an effluent gas stream from an exhaust line at a first temperature and,
 - means for maintaining the effluent gas stream at or near the first temperature; and
 - a scrubber interface device in fluid communication with the inlet manifold and configured to deliver the effluent gas stream from the inlet manifold to a gas scrubbing system.